

ZOOLOGY.—*Three new cave amphipods from the West Indies.* CLARENCE R. SHOEMAKER,¹ U. S. National Museum.

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During the Smithsonian-Bredin Caribbean Expedition of 1958, caves of several of the Lesser Antilles were investigated. The first two of the new amphipods described below were collected by Desmond Nicholson, captain of the Expedition's vessel, *Free-lance*, from a fresh-water stream in Dark Cave, Barbuda, on April 25, 1958. The third new species, the type of a new genus, was collected by Gilberto Silva Taboado during his investigations of the fauna of Cueva Grande, a large cave in Las Villas Province, Cuba.

Family BOGIDIELLIDAE Hertzog, 1936

Genus *Bogidiella* Hertzog, 1933

Bogidiella bredini,² n. sp.

Fig. 1

Material examined.—Two specimens, a male and a female, from Dark Cave, Barbuda.

Description.—FEMALE: Side lobes of head prominent and distally rounding; eyes absent. Antenna 1 less than half the length of the body; first joint of peduncle a little stouter and longer than second; second joint twice as long as third; flagellum about equal in length to the peduncle, and consisting of about 12 joints; accessory flagellum of 3 or 4 joints and reaching a little beyond the second joint of primary flagellum. Antenna 2, a little shorter than 1; gland-cone prominent; third joint half the length of the fourth; fourth joint a little stouter and a little longer than the fifth; flagellum shorter than fifth peduncular joint and consisting of 5 joints which decrease in length consecutively.

Mandible, cutting-edge with few teeth; accessory plate well developed, broad distally, without teeth, but with crenulate distal margin; 5 spines in spine-row; molar low and conical with

a very small triturating surface which is armed with several slender teeth and a long seta; palp, 3-jointed, the second joint the longest. Maxilla 1, inner plate broad and bearing 2 plumose setae; outer plate with 7 spine-teeth which are nearly simple; palp 2-jointed, second joint bearing 3 slender terminal spines. Maxilla 2, inner plate a little wider but shorter than outer plate and armed with 7 spines; outer plate with 5 spines. Maxilliped, inner lobe reaching little beyond base of outer lobe, and armed distally with 3 slender spine-teeth and 3 setae; outer lobe reaching only to base of second joint of palp, armed distally with 3 spine teeth and 1 seta, on the inner margin with 4 setae; palp 4-jointed, fourth joint well developed, with a comb of fine spinules on inner surface, and bearing a slender nail having a spine and a seta at its base. Upper lip symmetrical. Lower lip with inner lobes poorly developed; side lobes short and blunt.

Gnathopod 1, longer and stronger than 2; second joint rather short, not as long as the sixth, somewhat, expanded for the greater part of its length; third joint short; fourth joint about as long as the fifth and with a brush of fine setae on lower margin; fifth joint produced below into a narrow lobe carrying a few spines; sixth joint very large and strong, widest proximally and converging to a narrow apex, rear margin short; palm very oblique and without defining angle, slightly convex, on the outside armed with about 20 short slender submarginal branched spines, and with a group of 3 slender spines at center, a row of 10 rather stout branched spines beginning on the rear margin of the joint and extending a short distance into the palm, each of these spines having a slender spine springing from its base; on the inside of palm there is a groove into which the seventh joint fits, defined by a row of 3 stout spines and a group of slender spines, below which is another row of 4 spines (Fig. 1, *l*); seventh joint long, ending in a short nail, on the inner margin are 2 short spinules distally and 1 spinule near the center, on the outer margin are 2 short setae. Gnathopod 2, second joint not as much expanded as that of gnathopod 1, and about as long as the sixth joint; fifth joint half the length of the

¹ Mr. Shoemaker died on December 28, 1958, leaving this manuscript nearly completed. It was prepared for publication by Thomas E. Bowman, U. S. National Museum, who added Fig. 2, *j*, to those drawn by Mr. Shoemaker.

² Named in honor of J. Bruce Bredin, sponsor of the Expedition.

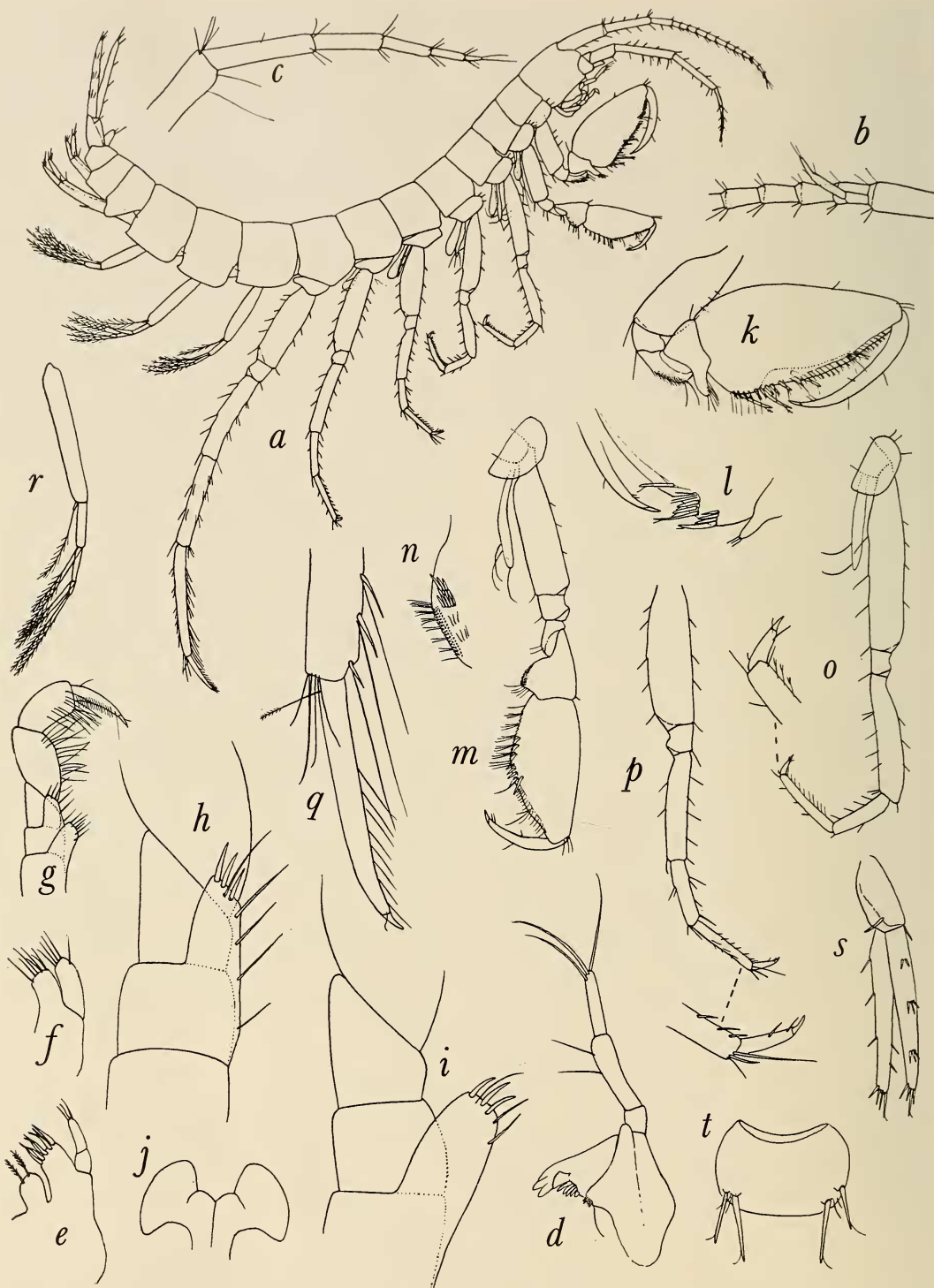


FIG. 1.—*Bogidiella bredini*, n. sp., female holotype: a, Entire animal, lateral; b, antenna 1, showing accessory flagellum; c, antenna 2; d, mandible; e, maxilla 1; f, maxilla 2; g, maxilliped; h, maxilliped enlarged, showing outer lobe; i, maxilliped enlarged, showing inner lobe; j, lower lip; k, gnathopod 1; l, gnathopod 1, sixth joint, inside of palm; m, gnathopod 2; n, gnathopod 2, inside rear margin of sixth joint; o, pereopod 1; p, pereopod 3; q, pereopod 5, distal end; r, pleopod 1; s, uropod 3; t, telson.

sixth, with the lower lobe rather broad and carrying a few spines and a brush of fine scales or setae on rear margin; sixth joint widest in the middle, rear margin with 7 groups of spines; palm about as long as the rear margin of joint, very oblique, slightly convex, without defining angle, but having a row of 5 or 6 spines where the palm curves into the rear margin of joint; on the outside of the palm is a row of 15 or 16 slender curved bifurcate submarginal spines extending almost the entire length of the palm, and a group of 3 long slender spines near the center; on the inside of the palm near its juncture with the rear margin of the joint are 3 rows of spines, the first or distal of group consisting of 3 spines, the second group of 4 spines, and the third of 5 spines, below these spines are 2 groups of slender spines (Fig. 1, *n*) and a narrow brush of fine setae adjacent to the rear margin of the joint; seventh joint fitting palm, and resembling that of gnathopod 2.

Peraeopods 1 and 2 are alike and carry rather few spines. Peraeopod 2, second joint much longer than any of the following joints and little expanded; fourth joint not quite as long as the fifth and sixth combined; seventh joint short, nearly straight, with a spinule on the inner margin, and bearing a small nail with a seta at its base. Peraeopod 3, about as long as 2, but shorter than 4; second joint little expanded and much longer than any of the succeeding joints; fourth joint not quite as long as the fifth and sixth combined; seventh joint like that of peraeopods 1 and 2 but a little longer and having 2 spinules on inner margin. Peraeopod 4, like 3, but longer; seventh joint broken, so the number of spinules could not be determined. Peraeopod 5 very much like 4, but much longer and with longer and more numerous spines; second joint about as long as the fourth, which is about equal in length to the fifth; fifth joint a little shorter than the sixth; seventh joint nearly half as long as the sixth, slender, with 8 slender spinules on inner margin, a sensory seta on outer margin, and having a small nail with a seta at its base.

Uropods 1 and 2 reaching back about the same distance. Uropod 1, much longer than 2; peduncle nearly twice as long as the subequal rami, a spine on lower margin near the proximal end, and a spine at the distal end of the outer and inner margin; rami without lateral spines, but with distal spines. Uropod 3, very long, peduncle not half as long as the subequal rami, and bearing a spine on the upper outer margin and one at the distal

end of the lower margin; outer ramus with 3 groups of lateral spines, and a group of terminal spines; inner ramus with 3 spines on inner margin, 2 on outer margin, and a group of terminal spines. Telson short, broader than long, sides convex, rear margin nearly straight and with 2 spines and 2 setae at either side.

Pleopods alike, but the third is the shortest. Pleopod 1, peduncle much longer than outer ramus, which consists of 3 joints, each consecutively shorter, and each bearing 2 plumose setae; inner ramus reduced to a very small single joint bearing a long terminal plumose seta. Pleopod 2 is like pleopod 1. Pleopod 3 is like 1 and 2, but shorter.

The coxal plates are all shallow and are as shown in Fig. 1, *a*. The metasome segments are as shown in Fig. 1, *a*. The branchiae occur on gnathopod 2 and peraeopods 1-4, and are rather narrow simple sacs. Marsupial plates occur on gnathopod 2 and peraeopods 1-3. The marsupial plates are narrow and rather short, and carry very few setae. Length of animal from front of head to the end of uropod 3, about 7 mm.

MALE: Length 5.8 mm. Its characters agree closely with those of the female, but several peraeopods are missing. A pair of small genital papillae is present on the ventral surface of the seventh peraeon segment; to the right one is attached a slender filament, coiled distally. Under high magnification the filament is seen to be made up of minute granules, which appear to be spermatozoa.

Types.—Holotype, female, U.S.N.M. no. 102418. Allotype, male, U.S.N.M. no. 102419.

Two species of *Bogidiella* have been described from the Americas, *B. neotropica* by Sandra Ruffo (1952) from a small brook, tributary to the Rio Cupari, Brazil, and *B. brasiliensis* by Rolf Siewing (1953) from Bahia and Ilhabela, Brazil. *B. neotropica*, described from a single specimen about 3 mm in length, is the largest species heretofore described, but it is much smaller than the present species which measures about 7 mm. In some of its characters *B. bredini* is much like *B. neotropica*, and whether the disagreements which occur are due to greater maturity of *B. bredini* or differences in sex, cannot be determined from the known material. The pleopods of *B. neotropica* have only one ramus each, while in *B. bredini* each has a well-developed outer ramus and a very much reduced inner one. In *B. neotropica* the accessory flagellum has 2 well-developed joints and

a smaller terminal joint, while in *B. bredini* there are 3 well-developed joints and a smaller terminal joint. No spines or setae are shown on the dactyls of the peracopods of *B. neotropica*, but in *B. bredini* all of the dactyls have them, the last having as many as eight. *B. brasiliensis*, while less than 2 mm in length, has two rami to the pleopods, with the inner ramus much less reduced than in *B. bredini*. The telson is long in proportion to its width, and has a small median lobe distally. The first antenna is nearly twice as long as the second, and bears a unisegmental accessory flagellum.

Of the remaining three species of *Bogidiella*, only *B. skopljensis* (Karaman, 1933) from Skopje, Yugoslavia, has biramous pleopods, and it differs markedly from *B. bredini* in the form and armature of the antennae, peraeopods, and telson.

Family GAMMARIDAE

Genus *Metaniphargus* Stephensen, 1933

Metaniphargus nicholsoni,³ n. sp.

Figs. 2, 3, a-c

Material examined.—Thirty specimens from Dark Cave, Barbuda, collected during the Smithsonian-Bredin Expedition. Also, more than 100 specimens collected in Dark Cave by G. A. Seaman in November 1955 and donated by him to the U.S. National Museum.

Description.—MALE: Head and antennae as shown for the female (Fig. 2a), but possibly the antennae are a little longer in the male; accessory flagellum as long as the first joint of the primary flagellum and consisting of one long joint and a very short terminal joint. Eyes not present.

Upper lip symmetrical. Mandible, cutting-edge toothed; accessory plate strong, 3-pronged; spine-row of 2 stout plumose spines and several slender spines; molar strong, triturating surface narrow with a tuft of setae at the front end and a long plumose seta at the rear end; palp 3-jointed, first joint over half the length of the second, which is about equal in length to the third; third joint is pectinate on the lower margin and carries a distal group of long spines. Maxilla 1, inner plate broad and carrying about 20 long plumose setae on its straight outer mar-

gin; outer plate armed with 11 strong pectinate spine-teeth; palp 2-jointed, and armed distally with 6 strong spine-teeth and one long slender seta. Maxilla 2, outer plate wider, but a little shorter than the inner; inner plate carrying a diagonal row of closely-set plumose setae, besides the distal and marginal spines. Maxilliped, inner plate reaching beyond the middle of the outer plate, armed distally with 3 rather stout spine-teeth and a row of subdistal plumose setae which continues part way down the inner margin; outer plate reaches to about two-thirds the length of the second joint of the palp, armed distally with 3 long plumose spines, and on the inner margin with a row of about 11 stout spine-teeth and a submarginal row of slender spines; palp 4-jointed, fourth joint about two-thirds the length of the third, armed with a nail and carrying a diagonal row of 5 closely set ridges or setae on the inner surface. Lower lip without inner lobes, and with short blunt side lobes.

Gnathopod 1 (Fig. 2, f), shorter than 2; second joint expanded, a little longer than the fifth joint, a few short spines on front margin, 4 groups of long spines of 2 spines each on rear margin, and 3 long backward-directed submarginal spines near the proximal end of rear margin. Third and fourth joints short and rather stout, the fourth with a brush of setae on lower margin; fifth joint much longer and a little wider than the sixth, lower margin bearing 5 or 6 groups of spines, some of which are bifurcate at apex; front margin with a group of spines near the middle and a distal group; sixth joint about two-thirds as long as the fifth, widest in the middle, front margin slightly convex and bearing an apical and a sub-apical group of spines, rear margin straight and bearing three groups of spines, the longer of which are bifurcate at apex; palm transverse, slightly convex, smooth, defined on the outside by 3 slender bifurcate spines, with 3 shorter straight submarginal spines between these and the hinge of the seventh joint, and a curved spine just before the hinge, at the defining angle on the inside of palm are 2 short, stout bifurcate spines, 2 straight spines near the middle and a curved distal spine; seventh joint fitting palm, bearing a nail, which is about one-third the length of the joint, at the base of which are a forward-pointing tooth and a seta, inner margin with a submarginal seta, outer margin of joint with a forward-curving seta. Gnathopod 2 (Fig. 2, h) a little stouter and much longer than 1, second joint expanded, about as

³ Named in honor of Desmond Nicholson, captain of the Expedition's vessel, *Freelance*, who collected the amphipods here described.



FIG. 2.—*Metaniphargus nicholsoni*, n. sp., a-e, g, i-l, female; f, h, male: a, Anterior end, lateral; b, mandible; c, maxilla 1; d, maxilla 2; e, maxilliped; f, gnathopod 1; g, gnathopod 1; h, gnathopod 2; i, gnathopod 2; j, distal end of gnathopod 2; k, peraeopod 2; l, peraeopod 3.

long as the sixth, with a small spine on front margin, and 5 groups of 2 spines each on rear margin; third and fourth joints short and stout; fifth joint a little shorter and a little wider than the sixth, widest distally, outer margin with a small median spine and a distal group, rear margin convex, with a brush of fine spinules or setae and 10 or 11 groups of spines, the longest member of each being bifurcate at apex; sixth joint long and narrow, widest in the middle, both front and rear margin slightly convex, front margin with 2 short spines and a distal group, inner margin with a brush of 5 setae and 4 groups of spines, some of which are serrate and the longest one in each group is serrate and bifurcate at the apex; on the inside of the sixth joint are 6 groups of spines near the front margin; palm very oblique, nearly as long as the rear margin of joint, nearly straight, smooth, without defining angle, grooved along its length, the edges of the groove bearing a series of blunt spines, a group of long setae at either end of the groove; seventh joint fitting palm, with a seta on the outer margin near the proximal end, inside margin of joint has what appear to be a number of slender forward pointing teeth, but they are so closely appressed to the margin that at first they appear to be part of the cuticle.

Peraeopods 1 and 2, slender and about equal in size and form. Peraeopod 2, second joint not much expanded and as long as the fourth and fifth joints combined, front margin bearing about 6 short spines, rear margin with 4 short spines on lower half and 3 long spines on upper half; fourth joint scarcely at all expanded and a little longer than the fifth; fifth and sixth joints not expanded and equal in length; seventh joint short and bearing a short nail with a spinule and a seta at its base. Peraeopod 3, much longer than 2; second joint considerably expanded, about four-fifths as wide as long, front margin convex and armed with about 11 spines, rear margin nearly straight, with an upper and lower lobe; fourth joint little expanded and a little shorter than the fifth; fifth joint very little shorter than the sixth; fourth to sixth joints bearing groups of spines on their front and rear margins; seventh joint short and like that of the second peraeopod. Peraeopod 4, second joint considerably expanded, nearly as wide as long, front margin less convex than in 3 and armed with 10 spines, rear margin slightly convex and with an upper and lower lobe; the third to seventh joints are like those of peraeopod 3, but longer and a little stouter. Peraeopod

5 (Fig. 3, *f*), second joint narrower in proportion than that of 3 or 4, about three-fourths as wide as long, front margin a little convex and armed with 7 spines, rear margin a little convex and with an upper and lower lobe, the upper lobe being not as pronounced as in peraeopod 3 or 4, and the spines in the serrations being stouter than in 3 or 4; the third to seventh joints are like those of peraeopod 4, but are a little stouter.

Uropod 1 and 2 extending back about the same distance; uropod 3 extending back much farther. Uropod 1, peduncle a little longer than the inner ramus, upper outer margin with 2 lateral and 2 distal spines, the lower of which is the stouter, inner margin with 2 lateral spines and one distal spine, lower margin with one spine; outer ramus without lateral spines but with a terminal group; inner ramus with one lateral spine and a terminal group. Uropod 2, peduncle as long as the inner ramus, without spines on upper outer margin, and with one distal spine on the upper inner margin; outer ramus shorter than the inner and without lateral spines but with a terminal group; inner ramus with one lateral spine on outer and one on inner margin and a distal group. Uropod 3, peduncle much shorter than outer ramus, but about two-thirds as long as the inner ramus, upper outer margin with 2 distal spines, and inner margin with one; outer ramus with a small second joint, first joint with 3 groups of spines on the outer margin, inner margin with 6 groups of spines, 2 in each group being short and stout, and one longer and plumose, distal margin with a group of spines; second joint short, narrow and conical, with a lateral spinule and 2 apical spinules; inner ramus slender, about half as long as outer ramus, and with sides converging to a sharp apex, outer margin with one lateral spine and a very small spinule near the apex; inner margin with 3 spines. Telson short, extending to about the end of the peduncle of uropod 3, divided to its base, each lobe converging to a narrow, sharp apex, outer margin of each lobe with one spine, inner margin of each lobe with 2 lateral spines and 2 apically, all spines being branched at apex (Fig. 3, *o*).

Coxal plates 1-5 are deeper than their body segments. Coxal plate 1, front margin convex and rear margin concave, with a few spines on the front and lower margin. Coxal plate 2 like that of 1, but a little wider and deeper. Coxal plates 3 and 4 much alike, a little deeper than 2, and with lower margin evenly rounding. Coxal plate

5 is the largest and deepest, the front lobe is twice as deep as the rear lobe and extends down about two-thirds the length of the second joint of the pereopod (Fig. 3, *b*). Coxal plate 6 with a small front lobe (Fig. 3, *e*). Coxal plate 7 is as shown by Fig. 3, *f*. Metasome segments are as shown for the female by Fig. 3, *h*.

Urosome segment 1 with a single small spinule on either side of the rear dorsal margin, and urosome segment 2 with 2 spinules similarly placed. Pleopods all well developed. There does not appear to be any unusual character at the base of the outer ramus of the third pair, such as occurs in *M. curasavicus*. The branchiae occur on gnathopod 2 and pereopods 1-4, and are large, oval, simple and attached to the limb by a peduncle. Length of the male about 7 mm.

FEMALE: The female is very much like the male and differs only in detail. All of the figures here given of the female or of a fully developed ovigerous specimen. The head, antennae and front part of the female are shown by Fig. 2, *a*. Gnathopod 1 is proportionately shorter and stouter than in the male; fourth joint with a brush of fine setae on lower margin; the palm of the sixth joint is transverse, smooth, with 3 short median spines, a curved spine at the base of hinge, and 3 short stout bicuspid spines on the outside at the defining angle, and on the inside at the defining angle are 3 long slender spines which appear to have 3 apical branches; the seventh joint has on the outer margin a sensory seta, and on the inner margin one or 2 small teeth or spines proximally, and a long nail with a forward-pointing tooth and a seta at its base. Gnathopod 2 is a little stouter than that of the male.

Pereopods 1 and 2 very much like those of the male. Pereopod 3 much like that of the male; longer than pereopod 2, but shorter than 4, which is about as long as 5; the front lobe of its coxal plate is even larger in proportion than that of the male. Pereopods 4 and 5 much like those of the male, but the second joint is longer and narrower in proportion, and that of 4 has the upper rear lobe more developed. The metasome segments are as shown by Fig. 3, *h*. The first urosome segment has one dorsolateral spinule on either side, and the second segment has 3 on either side (Fig. 3, *i*). The pleopods are like those of the male.

Uropods 1 and 2 are alike in both sexes. Uropod 3 is like that of the male, but is somewhat less spinose. The telson is very similar to that of the

male; outer margin of each lobe with 2 marginal spines, inner margin with one lateral spine and one just below the apex, all the spines being branched apically (Fig. 3, *n*). The branchiae are like those of the male, and occur on gnathopod 2 and pereopods 1-4. The marsupial plates are narrow, and carry few setae (Fig 2, *i*, *k*). The female reaches a length of 7.5 mm.

Types.—Holotype, male, U.S.N.M. no. 102424; allotype, female, U.S.N.M. no. 102425; and 28 paratypes, all from Dark Cave, Barbuda, collected by Desmond Nicholson, April 25, 1958.

M. nicholsoni is very similar to *M. beattyi* Shoemaker, 1942, from slightly brackish water in a deep well, St. Croix, Virgin Islands.⁴ It differs in details of the armature of the appendages and most obviously in the shape and armature of the telson. In *M. beattyi* the telson is relatively shorter and broader; each lobe bears two apical spines and a single spine on the distal part of the outer margin; there are no spines on the margins of the cleft as in *M. nicholsoni*. In *M. curasavicus* Stephensen, 1933, however, the armature of the telson is more similar to that of *M. nicholsoni*.

Paraweckelia, n. gen.

Head with prominent lateral lobes, and without eyes. Antenna 1 longer than antenna 2, with a 4-jointed accessory flagellum. Upper lip symmetrical. Mandible with toothed cutting-edge, strong accessory plate, well-developed molar, and a 3-jointed palp. Maxilla 1 with a row of plumose setae on inner plate, 9 spine-teeth on outer plate, and a 2-jointed palp. Maxilla 2 without a diagonal row of spines or setae on inner plate. Maxilliped with inner and outer plates well developed, and with a 4-jointed palp. Lower lip with inner lobes. Gnathopod 1 smaller than 2; both subchelate. Gnathopod 1 with fifth joint longer than the sixth; palm of sixth joint only slightly oblique. Gnathopod 2 with fifth joint much shorter than sixth and with a rear lobe. Pereopods 3-5 with expanded second joint. Coxal plate 4 incised in rear. Pleopods normal, not reduced. Uropods normal and with all rami well developed. Uropod 3 with 2-jointed outer ramus. Branchiae simple, not attached by a pedicel. Marsupial plates narrow, with few setae. Telson cleft to base. Type, *P. silvai*, n. sp.

⁴ Stephensen (1948) considered *M. beattyi* to be identical with *M. curasavicus* Stephensen, 1933, from Aruba, Curaçao, and Bonaire. It has not been possible to determine from Mr. Shoemaker's notes whether he agreed with Stephensen.—T. E. BOWMAN.

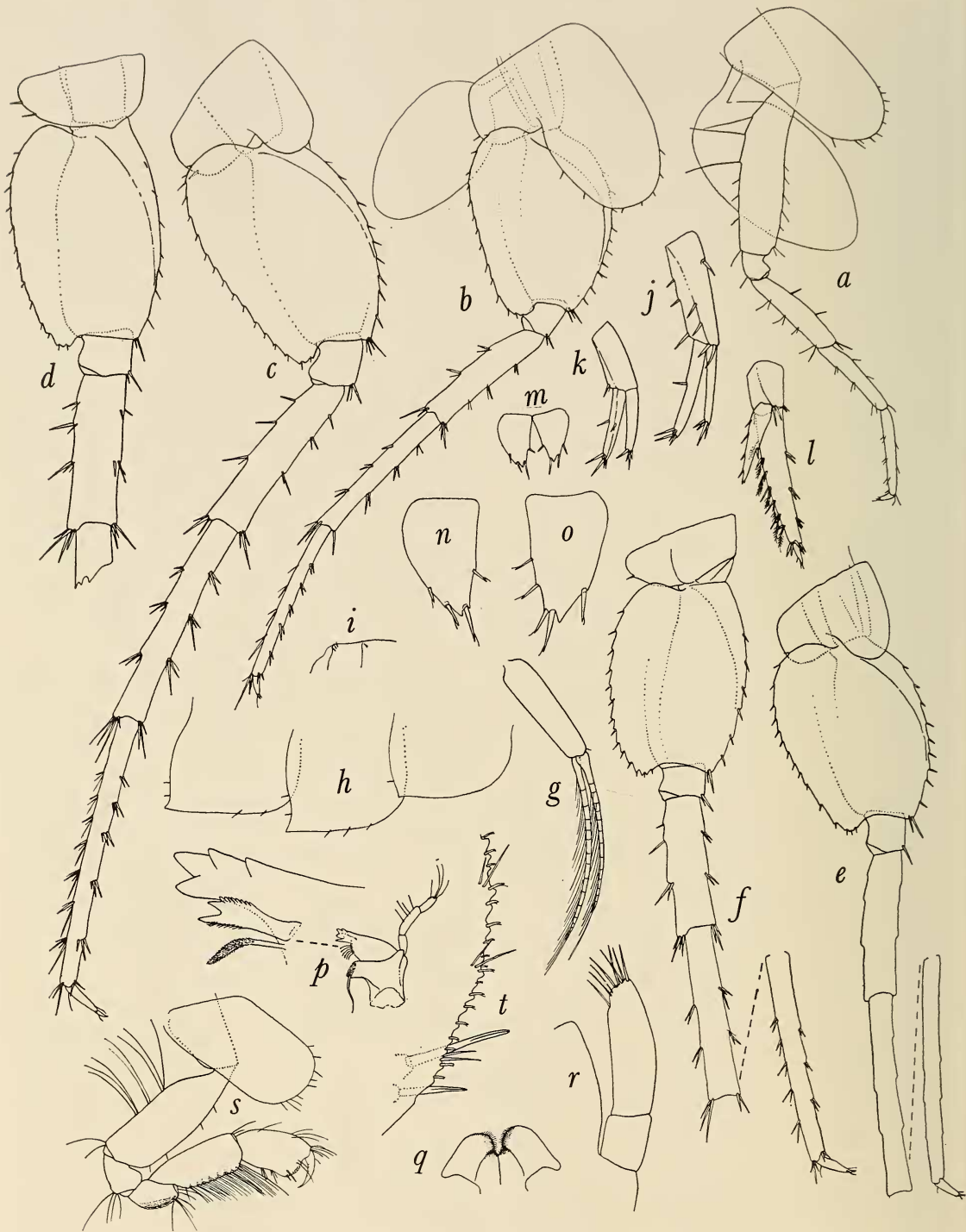


FIG. 3.—a-o, *Metaniphargus nicholsoni*, n. sp.: a, Peraeopod 2, male; b, peraeopod 3, male; c, peraeopod 4, female; d, peraeopod 5, female; e, peraeopod 4, male; f, peraeopod 5, male; g, pleopod 1, female; h, metasome segments, lateral, female; i, urosome segments, lateral, male; j, uropod 1, female; k, uropod 2, female; l, uropod 3, female; m, telson, female; n, left half of telson, female; o, right half of telson, male. p-t, *Paraweckelia silvai*, n. sp., female: p, Mandible; q, lower lip; r, maxilla 1, palp; s, gnathopod 1; t, palm of gnathopod 2.

Paraeckelia silvai,⁵ n. sp.Figs. 3, *p-t*; 4

Material examined.—Ten specimens, collected by Gilberto Silva Taboada in a fresh-water lake, Lago Martí, in Cueva Grande, the largest of the Caguanes Caves, a group of five caves located in Punta Caguanes, north coast of Las Villas Province, Cuba, February 1958.

Description.—FEMALE: Head with prominent rounding lateral lobes. Without eyes. Antenna 1, longer than 2; first joint equal in length to the second; third joint nearly half the length of the second; flagellum composed of about 30 joints; accessory flagellum of 4 joints. Antenna 2, first joint nearly circular and very prominent, gland-cone prominent; third joint about one-third as long as the fourth, which is equal in length to the fifth; flagellum not as long as the peduncle and composed of about 12 joints, the first of which is the longest.

Upper lip, symmetrical. Mandible, cutting-edge toothed, accessory plate, strong, armed with 2 distal teeth, a row of smaller teeth on outer margin and a brush of setae on inner margin (Fig. 3, *p*); spine-row of seven spines; molar prominent, its base produced forward into a narrow prominent process which extends beyond the base of the palp; triturating surface rather long and narrow and carrying a long plumose seta; palp 3-jointed, second joint longest, first and third being equal in length, second and third joints with very few spines. Maxilla 1, inner plate with 7 plumose setae; outer plate with 9 toothed spine-teeth; palp 2-jointed, and armed distally with 8 slender spines. Maxilla 2, inner and outer plate about the same size and length and each carrying very few spines; inner plate without diagonal row of spines. Maxilliped, inner plate reaching to about the base of the second joint of the palp and armed distally with 5 slightly curved spine-teeth and a row of plumose spines or setae which extends part way down the inner margin; outer plate not extending to the middle of the second joint of palp, armed distally with several spines, inner margin armed with rather stout spine-teeth and a few slender spines; palp, with 4 joints, the second of which is much the longest; fourth joint almost as long as the third, with a comb of fine setae or spinules on inner

surface, and with a small nail. Lower lip with broad outer lobes, narrow inner lobes, and with short blunt lateral processes.

Gnathopod 1, smaller than 2, second joint expanded and not quite as long as the fifth and sixth combined; fourth joint with a brush of setules and a few spines on rear margin; fifth joint longer than the sixth and with about 9 groups of long spines on rear margin; sixth joint widening distally, front margin with a few spines, rear margin with 2 groups of spines, palm convex, very finely toothed throughout, defined by a spine with a long thin branch, armed with about 7 submarginal branched spines, and with a curved spine just before the hinge of the seventh joint; inside of palm with a group of 5 spines at the defining angle, and with about 12 submarginal branched spines; seventh joint fitting palm, a sensory seta on the outer margin and 3 setules on inner margin. Gnathopod 2, second joint not much expanded and not as long as the sixth; fourth joint with rear margin produced forward rather sharply; fifth joint, front margin with one median spine, lower margin with a few spines; sixth joint very large, widest through the center, front margin with a few scattered spines and a distal group, rear margin with 4 groups of spines, palm convex, longer than the rear margin of the joint, crenulate, armed with about 18 short branched spines and defined by a long spine on the outside and one on the inside, each of which has a long slender branch (Fig. 3, *t*); seventh joint fitting palm, and apparently unarmed.

Peraeopods 1 and 2 slender and nearly equal in form and length. Peraeopod 1, second joint very little expanded, as long as the fourth and fifth combined; fourth joint very little expanded and about as long as the sixth; fifth joint shorter than the sixth; seventh joint about a third as long as the sixth, with a spinule on inner margin, and with a curved nail. Peraeopod 3, longer than 1 or 2, but shorter than 4, second joint expanded, front margin convex and spinose, rear margin almost straight, slightly serrate, spinose, and with a lower lobe; fourth joint little expanded and not as long as the fifth; fifth joint not as long as the sixth; seventh joint about a fourth as long as the sixth joint, and much like that of peraeopod 1. Peraeopod 4, shorter than 5; front and rear margins of second joint convex and spinose, rear margin with a rather shallow lower lobe; fourth, fifth, and sixth joints proportionately

⁵Named in honor of Gilberto Silva Taboada, who collected the new species and donated them to the U. S. National Museum.

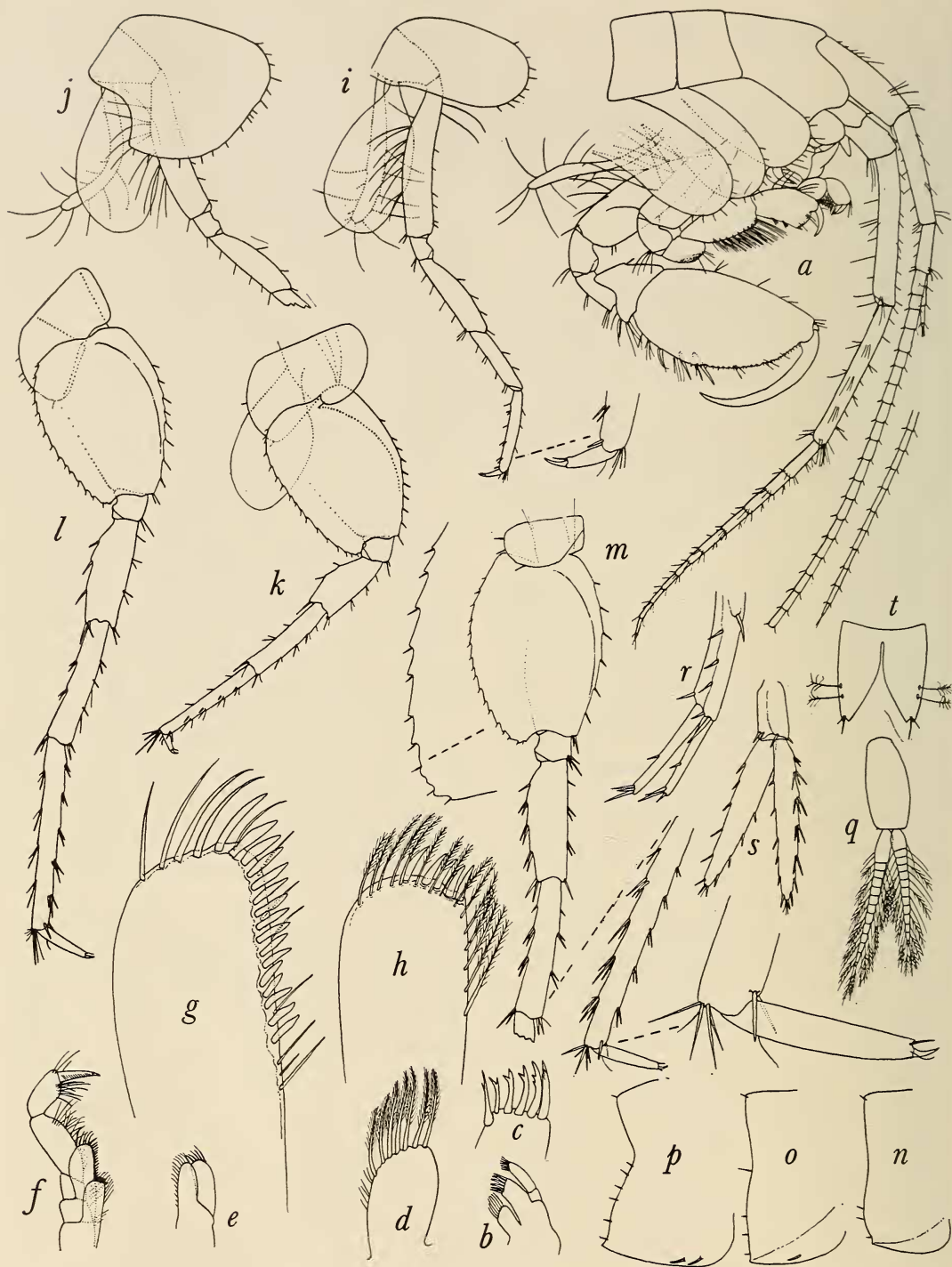


FIG. 4.—*Paraweckelia silvai*, n. sp., female: a, Anterior end, lateral; b, maxilla 1; c, maxilla 1, apex of outer plate (only 6 of the 9 spines shown); d, maxilla 1, inner plate; e, maxilla 2; f, maxilliped; g, maxilliped, outer plate; h, maxilliped, inner plate; i, pereopod 1; j, pereopod 2; k, pereopod 3; l, pereopod 4; m, pereopod 5; n, o, p, metasome segments 1, 2, and 3, respectively, lateral; q, pleopod 3; r, uropod 1; s, uropod 2; t, telson.

as in peraeopod 3, but longer; seventh joint about a third as long as the sixth. Peraeopod 5, proportionately much like 4, but longer; second joint with upper rear margin straight; seventh joint straight, about a third as long as the sixth, and is as shown by Fig. 4, *m*.

Coxal plates 1-4 deeper than their body segments, the first three with evenly rounding spinose lower margins. Coxal plate 4 much broader than the preceeding, rear margin deeply incised. Coxal plate 5, with a shallow front lobe. Coxal plates 5-7 as shown in Fig. 4, *k, l, m*.

Branchiae are simple oval sacs, without pedicels, and occur on gnathopod 2 and peraeopods 1-4. The marsupial plates are narrow, carry few setae and are attached to gnathopod 2 and peraeopods 1-3. The metasome segments are as shown by Fig. 4, *n, o, p*. Metasome segments 1-3 and urosome segment 1 each has two postero-median dorsal setae, and urosome segment 2 has a small spine on either side of the posterodorsal surface.

Pleopods, normal and well developed, outer ramus the shorter.

Uropod 1 reaches back a little farther than 2, and uropod 3 much farther than 1. Uropod 1, peduncle much longer than inner ramus, which is longer than the outer; the armature of spines is shown by Fig. 4, *r*. Uropod 2, much like uropod 1, but there are no spines on the peduncle except the distal one. Uropod 3, peduncle about a third as long as the outer ramus, which has small, narrow second joint; inner ramus a little shorter than the outer, and the spine arrangement of the uropod is shown by Fig. 4, *s*. Telson reaches back to about the end of the peduncle of uropod 3, about as broad as long, cleft nearly to its base, each lobe converging to a narrow indented apex containing a spine and a seta, and each outer lateral margin bearing 2 plumose setae. Length from front of head to end of uropod 3, about 12 mm.

MALE: The male is like the female, and can be distinguished only by the absence of marsupial

plates and the presence of male genitalia. The males in the present lot are about the size of the females except the male type which measures about 15 mm.

Types.—Holotype, male, U.S.N.M. no. 102461. Allotype, female, U.S.N.M. no. 102462, and eight paratypes.

The new genus, *Para-weckelia*, is closely related to the genus *Weckelia* Shoemaker, 1942, containing the single species *W. caeca* (Weckel) from Modesta Cave, near Cañas, Cuba. The most important difference is in the structure of the mandibular palp, which consists of the usual three joints in *Para-weckelia*, but is reduced to a single small joint in *Weckelia*. In addition, the oblique row of setae on the inner plate of the second maxilla of *Weckelia* is absent in *Para-weckelia*.

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